CHAPTER 10 - MITIGATION MEASURES

Implementation of mitigation measures by King County and Seattle can avoid, minimize, rectify, reduce, eliminate, or compensate for adverse impacts associated with the proposed actions. This chapter describes measures developed to mitigate the adverse impacts described in Chapters 5 through 9 and anticipated as a result of Alternative 1 and/or 2. The No Action Alternative would produce no construction or operation impacts, therefore, no mitigation measures are provided.

The mitigation measures have been organized by the resource topic most likely to be affected. Each resource has been subdivided to show those mitigation measures common to both alternatives and/or those measures specific to either Alternative 1 or 2. Additional mitigation may be specified by permits and other approvals.

10.1 EARTH RESOURCES

Following are mitigation measures that could be used to minimize or eliminate construction impacts to earth resources in addition to the typical erosion and sediment control best management practices that would be implemented. No additional measures are identified specifically for Alternative 2.

10.1.1 Measures Common to Both Alternatives

ER-1. Erosion controls will be implemented as per Ecology's "Stormwater Management Manual for the Puget Sound Basin," King County's "Surface Water Design Manual," or City of Seattle's Construction "Best Management Practices Manual" to reduce the potential for adverse construction impacts to surface waters. Soil stabilization of disturbed sites will be done as soon as practical to minimize the potential for continuing erosion.

ER-2. Implement a regular inspection and maintenance program for erosion control measures.

ER-3. Use excavated soils as backfill where appropriate and provide for proper re-use or disposal of soils not acceptable as backfill.

ER-4. Use temporary shoring in sensitive areas to minimize risk of landslides and subsidence.

ER-5. In accordance with uniform building codes, seismic concerns (e.g., liquefaction, earth movement) will be addressed in engineering design of structures. Geotechnical studies prepared during design will identify potential liquefaction areas and methods to limit the affects of liquefaction.

ER-6. In areas of known or suspected contaminated soils or groundwater, an assessment will be performed to identify boundaries of contamination prior to construction. In areas known to be contaminated, monitoring will occur during construction. A plan for handling potential soil and groundwater contamination in accordance with all applicable federal, state and local regulations, will

be prepared prior to construction. Contaminated soils will be tested and handled appropriately, depending upon the levels and types of contaminants present.

ER-7. Because the possibility exists for encountering contaminated soils and groundwater in an area not sampled, a contingency plan will be included to insure adequate stockpile areas for contaminated soils and batch tanks for groundwater.

10.1.2 Measures Specific to Alternative 1

ER(1)-1. Consider timing excavation of intertidal areas during low tides to minimize potential erosion and turbidity.

ER(1)-2. Use silt fences, curtains or sheet piles on either side of pipeline construction in intertidal and submerged segments to reduce the dispersion of sediments throughout the water column and minimize slumping and turbidity.

10.2 AIR RESOURCES

No alternative-specific mitigation measures are identified.

10.2.1 Measures Common to Both Alternatives

AR-1. During construction, impacts to air resources will be mitigated through implementation of standard federal, state, and local emission control criteria and King County and Seattle construction practices. Mitigation measures could include some of the following:

- Spraying areas of exposed soil with water for dust control;
- Regular street cleaning; and
- Reducing exhaust emissions by minimizing vehicle idling.

AR-2. If a permit is required by the Puget Sound Air Pollution Control Agency (PSAPCA), Best Available Control Technologies (BACTs) will be applied in conformance with PSAPCA permitting requirements.

AR-3. The need for odor control facilities will be evaluated during design.

10.3 WATER RESOURCES

Mitigation measures for earth resources will also mitigate for water resources.

10.3.1 Measures Common to Both Alternatives

WR-1. Implementation of mitigation measures for erosion control (see ER-1) and contaminated groundwater (see ER-6).

WR-2. In compliance with Hydraulic Project Approval (HPA) permitting requirements for outfall installation, King County and Seattle will coordinate with the WDFW regarding adequate erosion and

sediment control construction methods. Excavations and pipeline installations will be completed in as short a period as practical.

WR-3. All petroleum products, lubricants, solvents, and other chemicals will be handled in accordance with the project's Hazardous Material Plan and Spill Prevention Plan.

WR-4. Project facilities will be operated in compliance with water pollution abatement rules and regulations for the sewerage system and permit requirements for the outfalls.

WR-5. Initial sampling for potential groundwater quality problems will be investigated. A dewatering plan will be developed to address the effects of groundwater drawdown and its effects on surrounding structures and the potential for handling of contaminated groundwater.

10.3.2 Measures Specific to Alternative 1

WR(1)-1. Materials, including contaminated materials, excavated as part of outfall construction will be handled as required by permitting agencies. Any disturbance of the Denny Way Sediment Cap during outfall construction will occur in compliance with existing regulatory requirements.

WR(1)-2. Outfalls will be designed to meet applicable water quality standards.

10.3.3 Measures Specific to Alternative 2

WR(2)-1. Stormwater would be discharged in compliance with applicable standards.

10.4 BIOLOGICAL RESOURCES

Mitigation measures used for earth and water resources will also mitigate biological resources.

10.4.1 Measures Common to Both Alternatives

BR-1. When existing vegetation is disturbed, sites will be replanted with native or ornamental trees and shrubs as soon as practical following construction. Street trees will be replaced with similar species on the City of Seattle approved list of street trees.

BR-2. Construction in the intertidal and shallow subtidal zones will not take place from March 15 to June 15 to avoid periods of juvenile salmonid migration and will be limited to seasonal constraints outlined by WDFW in the Hydraulic Project Approval (HPA) so as to limit adverse impacts to marine mammals and adult salmon migration along the shoreline.

BR-3. During in-water construction, King County will coordinate with the Muckleshoot and Suquamish Tribes to reduce the potential for disruption of tribal fishing operations in Elliott Bay, especially from late July through November. Protocols and agreements will be completed to minimize disruption or interference with treaty commercial fisheries.

10.4.2 Measures Specific to Alternative 1

BR(1)-1. Construction corridors for conveyance facilities within Myrtle Edwards or Elliott Bay parks will be limited to the narrowest width practical to minimize impacts to existing vegetation and trees. Whenever practical, disturbance of existing trees and shrubs will be avoided. Revegetation with similar species will occur as soon as practical following the completion of construction.

BR(1)-2. Whenever practical, the outfall alignment will be designed to avoid sensitive marine vegetation such as kelp. King County will coordinate with the WDFW regarding construction methods and measures for site restoration, if previously unidentified beds of kelp are encountered. Suitable backfill will be used in outfall construction to encourage subtidal restoration and natural revegetation within the littoral zone.

BR(1)-3. Trenching and other outfall construction activities occurring within Elliott Bay will be accomplished in the shortest time period practical to minimize the duration of disturbance to local marine mammals and waterfowl.

BR(1)-4. Exposed portions of outfalls will be designed to minimize the possibility of snagging anchors and fishing gear.

BR(1)-5. Treated flows which have been disinfected will be dechlorinated prior to marine discharge to minimize impacts to the biological community and meet water quality standards for chlorine toxicity.

BR(1)-6. King County will work with affected treaty tribes to develop appropriate notification procedures regarding operation of the Elliott West CSO Control Facility if chlorination/dechlorination system fails.

10.4.3 Measures Specific to Alternative 2

BR(2)-1. The South Lake Union Overflow would be constructed to minimize impacts to existing park vegetation and aquatic resources along the shoreline in South Lake Union Park Waterway 3. To accomplish this, as narrow of a construction corridor as practical would be used. Revegetation with native plants or desired landscape species would be done as soon as practical after construction.

BR(2)-2. Placement of the stormwater outfalls would occur so as to minimize impacts to existing vegetation within Myrtle Edwards and Elliott Bay parks, as well as minimize impacts to aquatic resources including marine plants within Elliott Bay.

10.5 ENERGY

No alternative-specific mitigation measures are identified.

10.5.1 Measures Common to Both Alternatives

EN-1. High efficiency pumps, blowers, etc. will be utilized whenever practical.

10.6 ENVIRONMENTAL HEALTH

10.6.1 Measures Common to Both Alternatives

EH-1. A Hazardous Material Plan and a Spill Prevention Plan will be required for all construction activities to minimize environmental health risks associated with the transport, storage, and use of potentially hazardous materials. A Hazardous Material Plan and a Spill Prevention Plan will be required for operation of the Elliott West CSO Control Facility and the Dechlorination Pipeline to minimize environmental and human risks associated with hazardous chemicals.

EH-2. All facilities will be designed to minimize the potential for leaks or breaks.

EH-3. For areas where contaminated soil, sediments, groundwater, or methane could be encountered, a Health and Safety Plan will be developed. The plan will specify procedures for work in areas where contaminated soil or groundwater could be encountered, including identification, storage, and disposal. Procedures also will be developed to monitor for vapor releases and prevent and control fires from potential methane ignition. The plan will incorporate standard practices specified in applicable regulations.

10.6.2 Measures Specific to Alternative 1

EH(1)-1. Design of the outfalls will incorporate features that should substantially reduce the possibility of pipeline rupture and minimize operational impacts and associated public health problems.

EH(1)-2. Measures described under WR(1)-1 will protect the environmental health of the users of Elliott Bay during construction through the Denny Way Sediment Cap.

EH(1)-3. Treated discharges will be disinfected to minimize bacterial contamination of Elliott Bay.

10.6.3 Measures Specific to Alternative 2

EH(2)-1. Stormwater outfalls would be sited to minimize risk to users of Myrtle Edwards and Elliott Bay parks as well as aquatic resources and recreational fishing facilities. Stormwater collection and conveyance facilities could be equipped with water quality control features such as catch basins to meet Ecology standards for stormwater discharges.

10.7 NOISE

No mitigation measures are identified specifically for Alternative 2.

10.7.1 Measures Common to Both Alternatives

NO-1. Construction activity will comply with City of Seattle noise control code. Work not meeting applicable noise restrictions would not be undertaken without obtaining a variance as allowed by City of Seattle regulations.

NO-2. Keep noisy construction equipment as far away from sensitive noise receptors as practical.

10.7.2 Measures Specific to Alternative 1

NO(1)-1. Tunnel fan vents will be sited in compliance with City of Seattle noise ordinances.

10.8 LAND AND SHORELINE USE

Mitigation measures to reduce impacts to earth, air, noise, water, recreation, aesthetics, and transportation would also mitigate most land use impacts. No alternative-specific mitigation measures are identified.

10.8.1 Measures Common to Both Alternatives

LU-1. King County and Seattle will work with local agencies to acquire all required permits for the project.

10.9 RECREATION

No alternative-specific mitigation measures are identified. Appendix V includes preliminary mitigation for work in Myrtle Edwards Park.

10.9.1 Measures Common to Both Alternatives

R-1. Construction activity will be scheduled with consideration for the following highly attended public events:

- Folklife Festival (Seattle Center)
- Bite of Seattle (Seattle Center)
- Fireworks Display (Myrtle Edwards Park)
- Seafair (downtown streets)
- Bumbershoot Festival (Seattle Center)

R-2. Detour routes will be established for bicycle/pedestrian pathways which need to be temporarily closed during construction. All pathways disturbed by construction will be restored following construction.

R-3. Recreational facilities disturbed during construction will be restored following construction.

10.10 AESTHETICS

Aesthetic considerations are an integral part of siting and design of wastewater facilities. Incorporating concern for aesthetic quality in the planning and design process can ensure that, as far as practical,

wastewater facilities are compatible with their local surroundings. Design criteria will be employed to reduce or eliminate aesthetic impacts on communities as much as practical.

There are no alternative-specific aesthetic mitigation measures identified.

10.10.1 Measures Common to Both Alternatives

The following general design criteria apply in some measure to all structures at the CSO control facility and regulating structures. All of these criteria are general guidelines which must be considered along with cost, functional requirements of the structures, and the character of the site.

AT-1. Design of structures will take views into consideration and minimize disturbance of existing views.

AT-2. All structures will be designed to blend with their surroundings including scale, building materials and color.

AT-3. A group of citizens representing local businesses and residents will review and comment on options for architectural treatment of the Elliott West site facilities.

AT-4. An art budget will be established to provide art as part of the project.

AT-5. Landscaping will be used to enhance the CSO control facility at the Elliott West site and buffer the site from Elliott Avenue.

AT-6. Security lighting will be designed to avoid glare to viewpoints on Queen Anne Hill.

10.11 HISTORICAL AND CULTURAL PRESERVATION

In order to mitigate potential impacts to archaeological deposits and historic structures and to meet Section 106 responsibilities, King County will execute and implement a Programmatic Agreement with EPA, the Washington Department of Archaeology and Historic Preservation, and the Advisory Council on Historic Preservation. The Programmatic Agreement has been proven to minimize construction stoppage and thus, construction costs. The Programmatic Agreement includes stipulations on the inventory, evaluation and effect determination on historic, archaeological and traditional cultural properties; describes preparation of a treatment plan prior to construction and supplemental treatment plans for sites discovered during construction; and includes information on monitoring, curation, and agency concurrence.

Figure 10-1 shows areas recommended for monitoring for archaeological deposits by a professional archaeologist during construction excavation. No alternative-specific mitigation measures are identified.

10.11.1 Measures Common to Both Alternatives

Both alternatives may affect hunter-fisher-gatherer and historic archaeological deposits in the South Lake Union Subbasin and possible hunter-fisher-gatherer archaeological deposits in the vicinity of the Elliott West site.

HC-1. Consultation with local affected Indian Tribes will be completed to obtain input regarding treatment of archaeological deposits.

HC-2. A construction monitoring plan will be prepared by a professional archaeologist. Professional archaeologists will follow procedures detailed in the cultural resources monitoring plan to monitor construction excavation at specified locations in the project area.

HC-3. If significant historic structures are identified by an historic architect or historian as being potentially impacted by the project, construction techniques will be specified to minimize vibration and ground settling.

10.12 TRANSPORTATION

No specific mitigation measures are identified for Alternative 2.

10.12.1 Measures Common to Both Alternatives

TR-1. Traffic plans will be developed in coordination with Seattle Transportation before pipeline construction.

TR-2. Where construction restricts or prevents access to abutting properties, disruptions of access will be minimized.

TR-3. Truck traffic will use designated construction routes.

TR-4. Major deliveries or removal of materials from construction sites will be minimized during peak-hour traffic periods to the extent practical.

TR-5. Appropriate measures will be taken to assure appropriate and safe separation of construction activity from vehicular, bicycle and pedestrian traffic. Where construction operations require temporary diversions or restriction of vehicular, bicycle or pedestrian traffic, flaggers and appropriate signing will be used to direct traffic around construction.

Figure 10-1

TR-6. Businesses, residents, and park users likely to be directly affected by required temporary traffic or access restrictions or revisions will be provided with advanced notification.

10.12.2 Measures Specific to Alternative 1

TR(1)-1. Waterborne construction vessels will be marked and lighted in accordance with applicable Coast Guard regulations so that operators of other vessels would be alerted to their presence and operating status.

TR(1)-2. A barge operation plan will be developed that minimizes impact to both treaty and non-treaty fishing activities.

TR(1)-3. In all instances where pipeline construction involves working in or near a railroad right-of-way or running a pipeline under railroad tracks, King County will work with the affected railroads to develop a construction plan to minimize impacts on rail operations and insure compliance with appropriate safety procedures

10.13 PUBLIC UTILITIES AND SERVICES

No alternative-specific mitigation measures are identified.

10.13.1 Measures Common to Both Alternatives

PU-1. Utility owners, property owners, and building tenants affected by utility relocation or removal will be notified in advance.

PU-2. New utility service systems will be installed and activated prior to removing existing systems.

PU-3. Emergency procedures will be developed for unprogrammed utility disruption.

10.14 SOCIOECONOMICS

No alternative-specific mitigation measures are identified.

10.14.1 Measures Common to Both Alternatives

SE-1. King County and Seattle will work closely with property owners and businesses to minimize disruption of business, access or other activities during construction.

SE-2. King County will work closely with property owners adjacent to the proposed Elliott West CSO Control Facility to minimize disruptions from operation of the facility through landscaping and, if necessary, odor controls.